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U S Nuclear Regulatory Commission
ATTN: Document Control Desk
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Prairie Island Nuclear Generating Plant Units 1 and 2
Dockets 50-282 and 50-306
License Nos. DPR-42 and DPR-60

60-Day Response to Bulletin 2004-01, "Inspection of Alloy 82/182/600 Materials Used in the Fabrication of Pressurizer Penetrations and Steam Space Piping Connections at Pressurized-Water Reactors"

On May 28, 2004, the Nuclear Regulatory Commission transmitted Bulletin (BL) 2004-01. Enclosure 1 contains the Nuclear Management Company, LLC, 60-day response to BL 2004-01 for the Prairie Island Nuclear Generating Plant.

Summary of Commitments

This letter contains no new commitments and no revisions to existing commitments.

I declare under penalty of perjury that the foregoing is true and correct. Executed on JUL 27 2004

Joseph M. Solymossy
Site Vice President, Prairie Island Nuclear Generating Plant
Nuclear Management Company, LLC

Enclosure

cc: Administrator, Region III, USNRC
Project Manager, Prairie Island, USNRC
Resident Inspector, Prairie Island, USNRC

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ENCLOSURE 1
BULLETIN 2004-01
PRAIRIE ISLAND NUCLEAR GENERATING PLANT 60-DAY RESPONSE

Nuclear Regulatory Commission (NRC) Requested Information

(1) All subject PWR licensees are requested to provide the following information within 60-days of the date of this bulletin.

(a) A description of the pressurizer penetrations and steam space piping connections at your plant. At a minimum, this description should include materials of construction (e.g., stainless steel piping and/or weld metal, Alloy 600 piping/sleeves, Alloy 82/182 weld metal or buttering, etc.), joint design (e.g., partial penetration welds, full penetration welds, bolted connections, etc.), and, in the case of welded joints, whether or not the weld was stress-relieved prior to being put into service. Additional information relevant with respect to determining the susceptibility of your plant's pressurizer penetrations and steam space piping connections to PWSCC should also be included.

Nuclear Management Company, LLC (NMC) Response

(a) Each of the two units at the Prairie Island Nuclear Generating Plant contains one pressurizer connected to the hot leg of the reactor coolant system piping by a ten-inch surge line, which enters the bottom of the pressurizer through a 14-inch nozzle. Each pressurizer is constructed of an upper head, shell assembly and lower head with a total of 93 penetrations. The upper head contains four nozzles and a manway, cast as part of the head. The lower head contains one surge nozzle also cast as part of the head and 78 penetrations with stainless steel nozzles attached to the inside of the vessel utilizing a partial penetration weld. The shell has nine penetrations with stainless steel nozzles attached to the inside of the vessel utilizing partial penetration welds.

The pressurizer upper head is hemispherical in shape and is made of cast SA-216 GR WCC carbon steel clad with austenitic stainless steel. The upper head contains four nozzles and one manway, which are described as follows:

Six-inch safety nozzles (2)

The six-inch safety nozzles were integrally cast with the upper head and as such are made of SA-216 GR WCC carbon steel. A 316L stainless steel safe end is attached to the nozzle using a full penetration 308/309 stainless steel weld material.

Four-inch relief nozzle (1)

The four-inch relief nozzle was integrally cast with the upper head and as such is made of SA-216 GR WCC carbon steel. A 316L stainless steel safe end is attached to the nozzle using a full penetration 308/309 stainless steel weld material.

Four-inch spray nozzle (1)

The four-inch spray nozzle was integrally cast with the upper head and as such is made of SA-216 GR WCC carbon steel. A 316L stainless steel safe end is attached to the nozzle using a full penetration 308/309 stainless steel weld material. An SA-213 Grade TP-304 stainless steel thermal sleeve is welded inside the spray nozzle using a stainless steel weld.

16-inch manway (1)

The 16-inch (inside diameter) manway was integrally cast with the upper head and as such is made of SA-216 GR WCC carbon steel. The manway cover was fabricated from SA-533, Grade A, Class 1 steel plate and is fastened to the manway with SA-193 grade B7 bolting and SA194 Grade 7 nuts. An insert fabricated from SA-240 type 304 stainless steel and a flexitallic gasket are installed between the manway and its cover.

Like the upper head, the pressurizer lower head is also hemispherical in shape and is made of cast SA-216 GR WCC carbon steel clad with austenitic stainless steel. The lower head has a total of 79 penetrations consisting of 78 heater element penetrations and one surge nozzle, which are described as follows:

Heater element penetrations (78)

Each of the 78 heater element penetrations consists of a stainless steel nozzle penetrating through a hole in the lower head and welded inside of the pressurizer with a partial penetration weld utilizing stainless steel weld material. A heater well assembly is inserted through the nozzles into the vessel. A 308L stainless steel fillet weld is used to attach and seal the stainless steel heater tube to the nozzle.

14-inch surge nozzle (1)

The 14-inch surge nozzle was integrally cast with the lower head and as such is made of SA-216 GR WCC carbon steel. A 316L stainless steel safe end is attached to the nozzle using a full penetration weld. The nozzle to safe end weld material is 308/309 stainless steel for Unit 1, however alloy 82 was used for the Unit 2 weld. A stainless steel thermal sleeve is welded inside the surge nozzle using a stainless steel weld for Unit 1 and Alloy 82 for Unit 2.

The pressurizer shell is fabricated from SA-533, Gr A, Class 1 manganese - molybdenum steel clad with austenitic stainless steel. There are nine penetrations in the shell consisting of eight instrument nozzles and one sample nozzle, which are described as follows:

¾-inch instrument nozzles (8)

Each instrument nozzle penetration consists of a stainless steel nozzle penetrating through a hole in the shell and welded to the inside of the shell with a partial penetration weld utilizing stainless steel weld material.

¾-inch sample nozzle (1)

The sample nozzle penetration consists of a stainless steel nozzle penetrating through a hole in the shell and welded to the inside of the shell with a partial penetration weld utilizing stainless steel weld material.

Conclusion:

Except for the pressurizer surge line welds, no alloy 82/182/600 materials exist in other locations of the Prairie Island Unit 1 and Unit 2 pressurizers. The pressurizer surge line welds are not within the scope of this bulletin, however, an alloy 82 weld material was used for the Unit 2 pressurizer surge nozzle to safe end weld.

NRC Requested Information

(b) A description of the inspection program for Alloy 82/182/600 pressurizer penetrations and steam space piping connections that has been implemented at your plant. The description should include when the inspections were performed; the areas, penetrations and steam space piping connections inspected; the extent (percentage) of coverage achieved for each location which was inspected; the inspection methods used; the process used to resolve any inspection findings; the quality of the documentation of the inspections (e.g., written report, video record, photographs); and, the basis for concluding that your plant satisfies applicable regulatory requirements related to the integrity of pressurizer

penetrations and steam space piping connections. If leaking pressurizer penetrations or steam space piping connections were found, indicate what followup NDE was performed to characterize flaws in the leaking penetrations.

NMC Response

(b) This question does not apply to Prairie Island since no alloy 82/182/600 materials exist in pressurizer penetrations or steam space piping with the exception of the Unit 2 surge nozzle to safe end weld. The pressurizer surge line welds are not within the scope of this bulletin.

NRC Requested Information

(c) A description of the Alloy 82/182/600 pressurizer penetration and steam space piping connection inspection program that will be implemented at your plant during the next and subsequent refueling outages. The description should include the areas, penetrations and steam space piping connections to be inspected; the extent (percentage) of coverage to be achieved for each location; inspection methods to be used; qualification standards for the inspection methods and personnel; the process used to resolve any inspection indications; the inspection documentation to be generated; and the basis for concluding that your plant will satisfy applicable regulatory requirements related to the structural and leakage integrity of pressurizer penetrations and steam space piping connections. If leaking pressurizer penetrations or steam space piping connections are found, indicate what followup NDE will be performed to characterize flaws in the leaking penetrations. Provide your plans for expansion of the scope of NDE to be performed if circumferential flaws are found in any portion of the leaking pressurizer penetrations or steam space piping connections.

NMC Response

(c) This question does not apply to Prairie Island since no alloy 82/182/600 materials within the scope of this Bulletin exist at Prairie Island; therefore an augmented inspection program is not necessary for the pressurizer penetrations within the scope of this Bulletin.

NRC Requested Information

(d) *In light of the information discussed in this bulletin and your understanding of the relevance of recent industry operating experience to your facility, explain why the inspection program identified in your response to item (1)(c) above is adequate for the purpose of maintaining the integrity of your facility's RCPB and for meeting all applicable regulatory requirements which pertain to your facility.*

NMC Response

(d) Personnel at Prairie Island understand the relevance of the recent operating experience associated with Alloy 600 in the industry and understand that these materials are susceptible to PWSCC. There are no alloy 82/182/600 materials within the scope of this bulletin in the Prairie Island Unit 1 and Unit 2 pressurizers. Meeting the code requirements, together with the inspection requirements, is adequate for the purpose of maintaining the integrity of the Prairie Island reactor coolant pressure boundary.

The Unit 2 pressurizer surge nozzle to safe end weld is constructed using an alloy 82 weld. This weld is not within the scope of this bulletin, however the weld is being scheduled for visual inspection (at a minimum) during the next scheduled Unit 2 outage in May of 2005. The weld was last inspected using UT and PT inspection techniques during February of 2002, with no indications detected.

NRC Requested Information

(2) *Within 60 days of plant restart following the next inspection of the Alloy 82/182/600 pressurizer penetrations and steam space piping connections, the subject PWR licensees should either:*

(a) *submit to the NRC a statement indicating that the inspections described in the licensee's response to item (1)(c) of this bulletin were completed and a description of the as-found condition of the pressurizer shell, any findings of relevant indications of through-wall leakage, followup NDE performed to characterize flaws in leaking penetrations or steam space piping connections, a summary of all relevant indications found by NDE, a summary of the disposition of any findings of boric acid, and any corrective actions taken and/or repairs made as a result of the indications found,*

or

(b) if the licensee was unable to complete the inspections described in response to item (1)(c) of this bulletin, submit to the NRC a summary of the inspections performed, the extent of the inspections, the methods used, a description of the as-found condition of the pressurizer shell, any findings of relevant indications of through-wall leakage, followup NDE performed to characterize flaws in leaking penetrations or steam space piping connections, a summary of all relevant indications found by NDE, a summary of the disposition of any findings of boric acid, and any corrective actions taken and/or repairs made as a result of the indications found. In addition, supplement the answer which you provided to item (1)(d) above to explain why the inspections that you completed were adequate for the purpose of maintaining the integrity of your facility's RCPB and for meeting all applicable regulatory requirements which pertain to your facility.

NMC Response

Based on the response to request 1(a), the response required within 60 days after plant restart following the next inspection is not applicable and will not be sent.